

# ABSTRACTED Knitted Outerwear Times

the official publication of the  
national knitted outerwear association

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INST. OF TEXTILE  
TECHNOLOGY

JUL 13 1961

sweaters • swim suits • infantswear • knit fabrics • polo shirts • gloves • headwear

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Vol. 30

MONDAY, JULY 3, 1961

No. 28

## NEKOMA Seminar

### Ben Greenfield Elected To Head N. E. District

PORTSMOUTH, N. H.— Benjamin Greenfield, Old Colony Knitting, Newton, Mass., was elected president of the Knitted Outerwear Manufacturers Association, New England District, at the annual week-end seminar of the organization held here at Wentworth-By-The-Sea. He succeeds Joseph Emple, Emple Knitting Mills, Bangor, Me. Mr. Greenfield previously had been first vice president of the New England District organization.

James Lanza, Roper and Lanza Knitting Co., Boston, succeeds Mr. Greenfield as first vice president. Martin Weiner, Revere Knitting Mills, Wakefield, Mass., was elected second vice president. Harold M. Linsky, Boston attorney, was re-elected executive secretary-treasurer and counsel of the New England knitters group.

Elected to the board of directors of the district organiza-

tion were the following: Norman L. Wilson, Ames Textile Corp., Boston; Herman S. Werner, Manchester Knitted Fashions, Manchester, N. H.; and Joseph Carter, Roosevelt Mills, Inc., Rockville, Conn.

The following were re-elected to the board of directors: Theodore M. Blum, Brookshire Knitting Mills, Manchester, N. H. Irving Greenberg, Bristol Knitting Mills, Inc., Fall River, Mass.; Sidney Reitzas, F. R. Knitting Mills, Fall River, Mass.; Louis G. Stoloff, New Knit Manufacturing Co., Lowell, Mass.; Justin L. Wyner, Shawmut, Inc., Stoughton, Mass.; and Paul Bernat, Garland Knitting Mills, Inc., Jamaica Plains, Mass.

Named to represent the district organization on the National Association's board of directors were James F. Nields, Ware Knitters, Inc., Ware, Mass., and Mr. Emple.

Alternates elected to the National board of directors are Saul O. Sidore, Brookshire Knitting Mills and Mr. Stoloff.

Preceding the election of new officers, a report on the district's operations during the past year was presented by Mr. Linsky.

## NEKOMA Seminar

### Brandwein Outlines Promotion Plan; '61 Sweater Queen Surprise Guest

PORTSMOUTH, N. H.—The primary aim of the promotional activities of the Knitted Outerwear Foundation is "to create an alliance with the nation's retailers to focus public attention on the industry's products." Edward A. Brandwein, administrative secretary of the National Knitted Outerwear Association told members of the Knitted Outerwear Manufacturers Association, New England District, at their annual seminar held here at Wentworth-by-the-Sea. Mr. Brandwein spoke at a banquet Saturday evening.

At a cocktail party which preceded the dinner, Mr. Brandwein introduced a surprise visitor to the three-day parley—Miss Christine Christie, the reigning Sweater Queen. She flew up Saturday afternoon especially to attend the banquet and to provide the backdrop for Mr. Brandwein's talk on the work of the Knitted Outerwear Foundation.

The Foundation, which is the promotional arm of the National Association, is now in its 16th year, Mr. Brandwein said. In contrast to the promotional

efforts of other industry groups, its work has been continued without a break during the 16-year period.

In most other industries, Mr. Brandwein pointed out, promotional campaigns usually begin with huge budgets and considerable enthusiasm, but seldom last more than a few years. He attributed this largely to the fact that such campaigns invariably are financed through assessments rather than on the volunteer basis which characterizes "our industry's promotional work."

"The basic principle of our industry's campaign," Mr. Brandwein stated, "is to confer status, appeal, prestige or other elements of preference for our products on the retailer and ultimately the consumer."

He pointed out that originally the Association's efforts were based almost exclusively on the creation of a Sweater Week. "Once that objective was established," he explained, "the campaign was broadened into an all year-round endeavor, exploiting a number of merchandising events for the benefit of the industry's sales."

Today, according to Mr. Brandwein, the Association through the Foundation distributes approximately 400,000 pieces of dealer aids and promotional material to retailers

(Continued on Page 23)



PORTSMOUTH, N. H. — The 1961 Sweater Queen with newly elected officers of the New England Knitted Outerwear Manufacturers Association at the district's annual seminar and golf tourney at Wentworth-By-The-Sea. Left to right, Harold Linsky, executive secretary and counsel; Norman L. Wilson, a director; Theodore M. Blum, a director; Ben Greenfield, president-elect; the Sweater Queen; E. A. Brandwein, NKOA administrative secretary; Joseph Emple, retiring president; James Lanza, first vice president; Lou Stoloff, second vice president; and Israel Cohen, a director.

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## Knitted Outerwear Times

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The Knitted Outerwear Times being the official publication of the National Knitted Outerwear Association, is exclusively devoted to the dissemination of information, the exchange of opinion, the stimulation of trade, and the general improvement of the knitted outerwear industry in accordance with the Association's basic objectives as expressed in the preamble of its by-laws.

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## Mill Modernization

# Caution Urged In Evaluating Equipment

PORTSMOUTH, N. H.—In evaluating new knitting equipment developments, sweater and knitted yardgoods manufacturers should not be too hasty in writing off established machinery in favor of new, untried types, Charles Reichman, editor of the KNITTED OUTERWEAR TIMES cautioned members of the Knitted Outerwear Manufacturers Association, New England District, at a seminar on technical developments held here Saturday morning in connection with the group's three-day meeting and golf tournament at Wentworth-by-the-Sea.

"The history of machinery changes in our industry," he pointed out, "discloses that major equipment upheavals have generally been short-lived and rarely completely dislodged any established system of knitting. In fact, if previous patterns of knitting machinery utilization in our industry mean anything, it should be clear to us that no basic system of knitting ever really becomes outmoded.

"A machine may deteriorate or become obsolete in terms of serviceability; it may fade in favor for a season or two or even for several years because of a shift in style. But invariably a time will come when some force will impel a system of knitting to return to the trade scene.

### Return of V-Bed

"An outstanding example of such a situation is the V-bed flat machine. When full-fashioned knitting developed into a large scale operation in our industry, the V-bed machine again became an important production tool not, of course, for garment manufacture, as it had once been widely used, but for the manufacture of rib collars and trims. The revival of the bulky knit sweater a couple of years ago furthered the resurgence of the V-bed flat latch needle machine. The jumbo stitch sweater vogue also thrust the circular links machine back into the limelight. Numerous other instances of machinery rebirth or, to put it more accurately, machinery demise and resurrection can be cited.

In urging knitters to be more circumspect in evaluating new machinery ideas, Mr. Reichman warned them, however, not to

methods of knitting or modifications in existing methods of knitting.

"No knitwear manufacturer determined to maintain his competitive position in the industry," he maintained, "can afford to ignore any new equipment development. But at the same time it is essential that the knitter maintain a sense of balance and not fall victim to astounding claims with respect to production and stitch possibilities or to glib salesmanship.

### Check Claims

"Radically new achievements in the machinery area must be evaluated with care and intelligence; they should be examined in the light of industry-wide trends as well as in terms of what its developers purport it can do."

Only in this way, he concluded, "can knitwear manufacturers derive maximum benefit from an important machinery breakthrough. This is the only way too that the impact of such a development on the industry can be softened."

"In its approach to new, revolutionary equipment ideas, outerwear knitters, according to Mr. Reichman, "fortunately have never yet greeted any major machinery innovation with the hysteria and lack of sober appraisal such as is now marking the introduction of the four-feed machine in the seamless hosiery industry."

In reviewing recent developments in knitting equipment,

Mr. Reichman pointed out that the trend increasingly is towards machinery of the broadest possible stitch and pattern scope without too great a sacrifice in machinery output rates. In circular sweater-strip machinery, this trend is exemplified in machines of wide diameter and increased number of feeds. In V-bed flat machines, he said, the trend is approved in the increased number of double lock units that are being introduced.

"It is important to remember, however, "that high rates of output in knitting machinery cannot possibly be synonymous with stitch versatility and broad pattern possibilities. The more flexible you try to make a knitting machine, the more difficult is the job of making it operate at a faster clip. When a machinery builder incorporates extra facilities for increasing the design capabilities of the machine, of necessity he is forced to make some sacrifices in the speed at which the machine can operate."

Mr. Reichman concluded his talk with a brief run-down on recent developments in synthetic fibers and yarns. An impromptu fashion show of garments embodying some of the new ideas in Orlon, Sayelle, Creslan, Antron and Cadon, Dynel, Zefran and Rhovyl arranged by Edward A. Brandwein, NKOA administrative secretary, was held. The manikens were waitresses at the hotel.

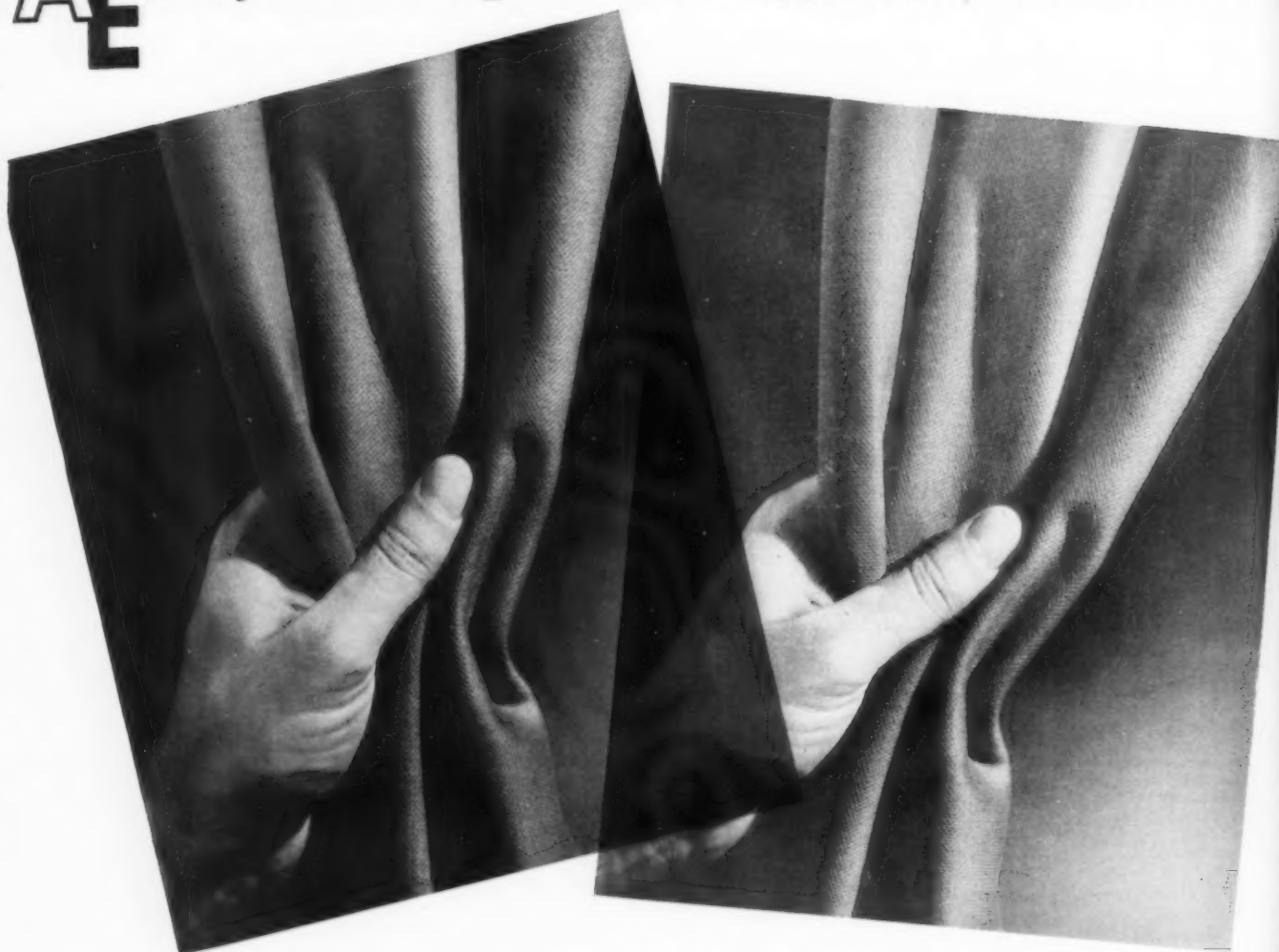
A wide range of experimental and commercial samples of fabrics knitted of Ban-Lon-processed yarns were also presented to the group. overlook new techniques, newer



Members of the New England district association examine garments and fabrics at seminar on machinery and fiber and yarn developments at Wentworth-by-the-Sea, Portsmouth, N. H.



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## Knitting Principles

# Fundamentals Of Warp Knit Engineering—Part 10

By A. REISFELD  
Director, Research and Development  
Gehring Textiles, Inc.

LET us now review briefly the main methods available for physical modification of yarns and their application in warp knitting. Despite the perpetually growing number of modified filament yarn variations, they may all be divided into two basic groups depending on the mode of their processing:

- Non-torque yarns, obtained by crinkling, curling, crimping, air blast and stuffer box treatment.

- Torque yarns, produced by throwing-doubling, false twisting, friction twisting and other means, all based on imparting to the yarn a torque, which is another definition of twist.

**NON-TORQUE MODIFIED YARNS**—As the name implies, modification is carried out without the assistance of twist. Thanks to its absence, the yarns are easier to handle, warp and knit than the torque type. There are several methods available for processing the yarn on non-torque principle:

**Crinkling**—This was an early attempt to modify nylon by imparting to it a wave-like configuration. The yarn was first knit into a circular fabric, heat set to fix the kinks of the "waves," then unravelled and coned—a costly and slow procedure (British Pat. 676,522). The yarn was subsequently warped and converted into a 2-bar jersey. The fabric so produced had an attractive crepe-like texture, excellent opacity and hand. Yet, it never gained acceptance due to the exorbitant price of the yarn.

**Texturing**—This process yields a non-stretch bulk yarn known as Taslan (U.S. Patent 2,783,609). The bulk is obtained by passing the twisted yarn (up to 12 tpi) through a jet providing a stream of turbulent air which untwists the filament bundle and whips up loops and kinks on the individual filaments (77 & 77A). Once the yarn leaves the air stream, the twist reasserts itself, closes up the bundle of filaments to lock the loops in position.

Since no heat is involved at any stage of processing, non-thermoplastic materials like rayon may be bulked by this method as well. Also, two materials of different colors and

characteristics, e.g. spun dyed rayon and nylon can be combined into a fancy yarn. The turbulence inside the jet produce intimate filament blending and intertwining to a point where the individual character of the constituent yarns is completely obliterated. Fig. 1 shows the yarn path as found on one type of Taslan processing machine. Many other ideas and devices for texturing have been advanced and patented, e.g. the Skyloft process (U.S. Pat. 2,807,862).

In the course of texturing, an average of 15-20 percent lengthwise shrinkage takes place in the yarn. This is because the loops withdraw a certain length from each filament. To make it possible, the yarn is delivered to the jet inlet up to 25 per cent faster than it is exited to be wound on a final package. The loops whipped up by air turbulence increase the yarn volume from 50-100 per cent and thus greatly enhance the covering powers of Taslan knit fabrics. For the same denier, the covering powers of Taslan fabric are almost 100 per cent greater than those of conventional yarn.

The bulk, size and frequency of loops may be controlled by applying suitable air velocity, delivery rate and twist to the yarn. By varying the size and frequency of loops it is possible to regulate the bulk, hand, covering powers and surface luster of the fabric. Taslan has a somewhat lower tenacity (by 10 per cent but higher elongation than the parent yarn).

Productivity of Taslan process is quite high. On 70 denier nylon it runs 19 pounds per spindle per 168 hour week. This applies to a processing speed of 300 feet/minute. Experimental models of new texturing devices have reached speeds of 650 feet/minute and beyond.

Taslan fabrics do not require any special finishing procedure.

Since the bulk effect is not influenced by finishing, there is no need to make a special allowance for fabric consolidation in the wet treatment.

Textured yarns have not, as yet, found any substantial application in warp knitting, although some tricot shirtings and outerwear fabrics have been made on a pilot basis. The hand and cover of the fabric is quite similar to that knit of spun yarn.

Taslan in tricot has been mostly used in conjunction with standard filament material. In jersey constructions, Taslan is invariably put on the front bar while ordinary filament material is used in the back bar. Since the back bar yarn is on the whole concealed inside the fabric and has little effect on appearance and hand, it would serve no purpose to place the expensive Taslan where it cannot be seen and appreciated.

A typical jersey construction involves 40 denier Taslan (actual denier 46-48) on the front bar and 40 denier standard nylon on the back. The fabric finishes 2 x 46 inches and yields 4.3 square yards/per pound.

By keeping the same threading but switching the wheels to get a reverse jersey stitch, one obtains an attractive, stable fabric of a batiste like hand. At six-inch quality and finished width of 2 x 58 inches it yields 5.82 square yards/per pound. Acetate and Taslan combination tricot cloths were also made on a pilot scale.

**Texturalizing**—This process renders a bulk yarn featured by softness and a good measure of elasticity. It is based on crimping the individual filament inside a stuffer box and heat setting them in their crimped configuration. One of the best known examples of texturalized yarn is Ban-Lon (U.S. Pat. 2,575,781, 2,575,837 — 838 — 839).

The principle of the Ban-Lon crimping machine is depicted in Fig. 2. The yarn, in unthrown form, comes off a pirn and is led into a stuffer box by means of feed rolls. The stuffer box is heated by resistance coils connected to a thermostat which maintains a uniform and con-

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FIGURE 1

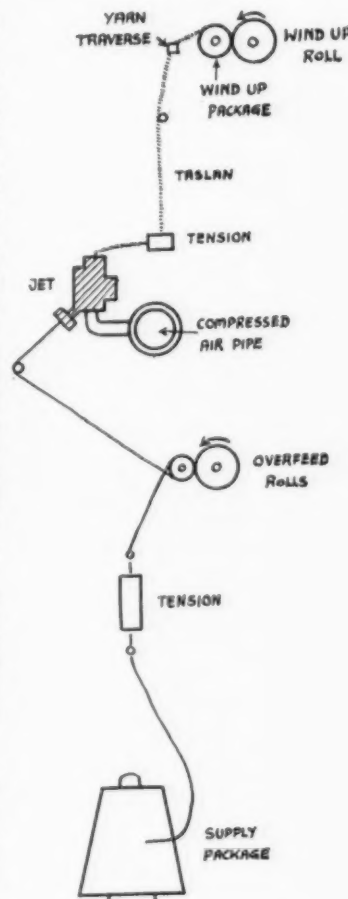
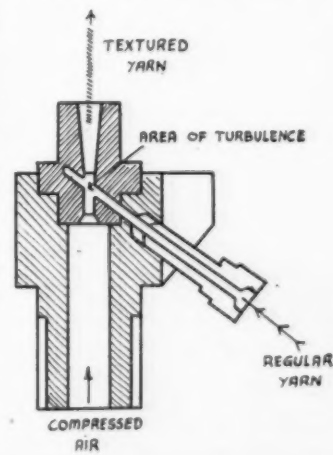
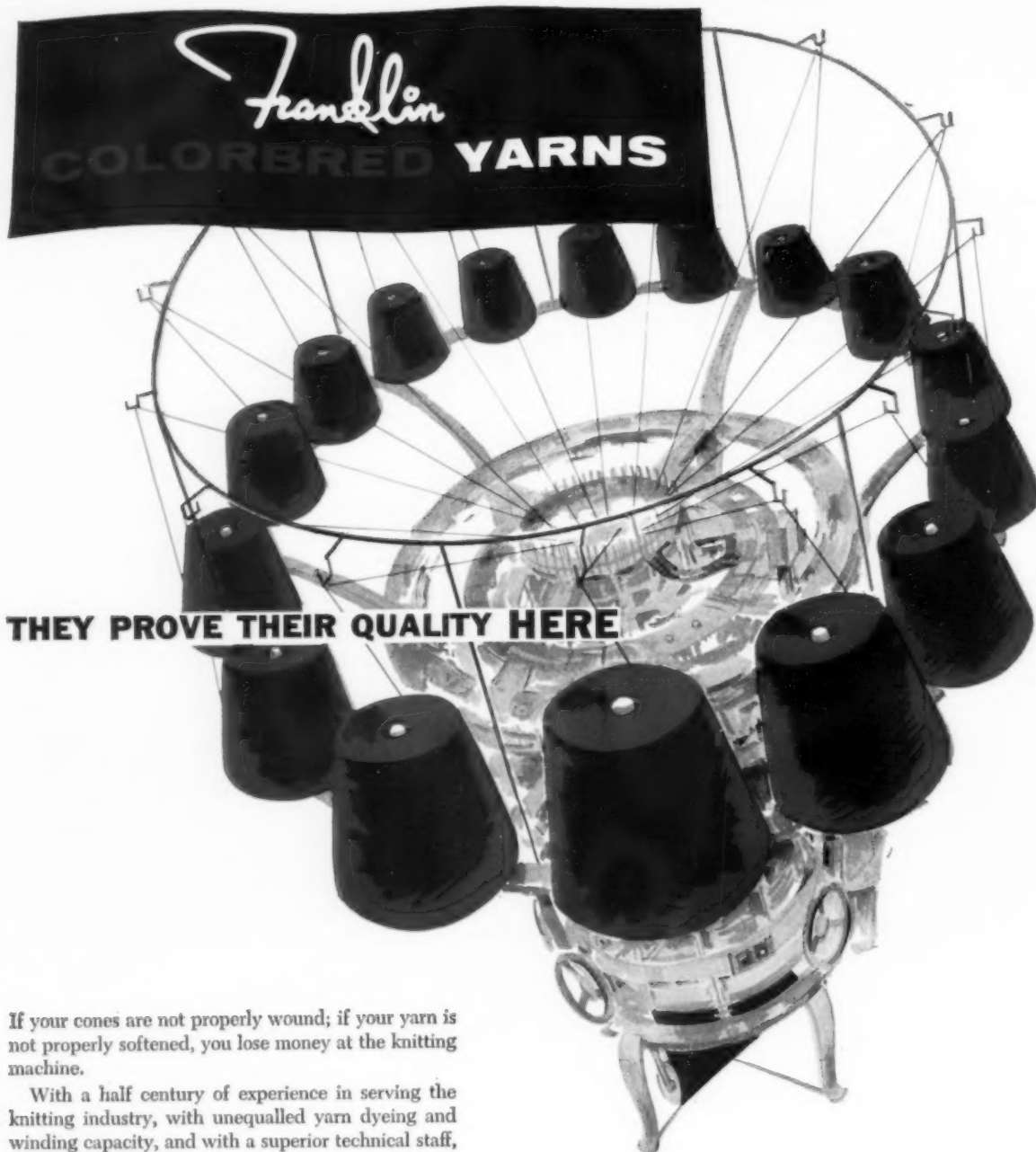


FIGURE 1A (Detail of Jet)



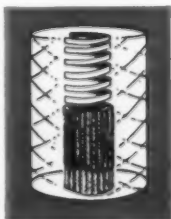


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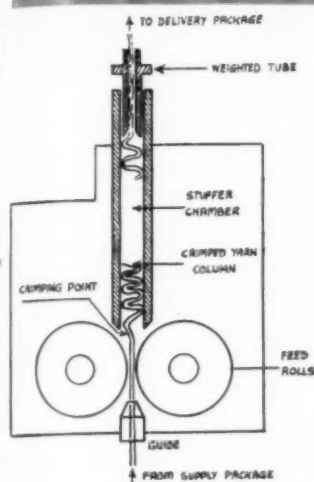


FIGURE 2

trollable temperature necessary to heat set the yarn. Fitting into the top portion of the box is a weighted brass tube which impinges against the yarn column accumulated in the stuffer chamber. As the yarn is forced by the feed rolls into the chamber it bears against the previously processed material so that its filaments buckle and crimp. The crimped yarn is removed through the tube at a uniform speed and ultimately wound onto a package.

The flow and quantity of yarn in the box is governed by the weighted tube. The latter is moved up and down the chamber by a yarn column and actuates microswitches controlling the feed rolls and hence delivery of material into the chamber. The amplitude and frequency of the crimp may be varied by regulating the ratio of delivery to wind up speeds and the weight of the tube (78). The yarn issuing from the top of the weighted tube is cleaned of broken filaments, oiled and coned.

The crimp produced by this method has an irregular, zig-zag like form. It increases the yarn bulk 200-300 per cent. The full crimp of yarn and consequently the bulk of fabric knit thereof is developed by relaxing it in a low temperature scouring bath followed by tumble drying. It is, therefore, necessary to knit the fabric at a loose quality to allow for the contraction taking place upon development of the crimp.

The textalized process is by far the most productive of all

bulk and stretch methods. Its output is about 42 pounds per spindle per 168 hour week or more than double that of Taslan. This applies to linear processing speed of 750 feet per minute. On experimental devices the speed has been boosted up to 1000 feet per minute. However, at such rate the uniformity of heat setting operation becomes difficult to maintain.

An important variation of the textalized principle is found in the so-called Spunize process (79). It utilizes the technique of stuffer box crimping but applies it en masse to a large number of ends (up to 400) in warp disposition. The supply packages are placed in the creel and the yarn, drawn through collecting eyeboard, is fed into the stuffer unit to be crimped as a warp (all ends processed simultaneously). After crimping, the warp is wound into a ball and treated in an autoclave to develop and heat set the crimp, and if necessary, dye the yarn. Finally, the warp is separated into individual ends and wound onto cones or tubes. Refinements and modifications of this method hold promise of making the Spunize process fully continuous with crimping, heat setting, dyeing and winding performed in one sequence. It is possible to regulate over a wide range, the bulking effect of the yarn and so tailor it to a specific end-use.

There is a number of other methods where the crimp is imparted to the yarn by means of gears, fluted rollers, heated shafts and others. None of these however, have been commercially exploited on any scale.

Only limited quantities of textalized yarns have been hitherto used in tricot knitting. They were applied in products such as underwear, dresswear, and sport shirting. The Raschel industry, on the other hand, consumes a certain amount of medium denier material for manufacture of laces. Here, the Textalized threads are employed for the so called "gimping," which in lace terminology means development of figure designs on mesh ground and also for "liners" or heavy threads utilized for accentuating the figure outline. The increased bulk and cover of these threads enhance appearance of the design.

Textalized yarns shipped to tricot knitters have almost invariably been knitted into jersey and reverse jersey cloths. Some were made with regular nylon on the back bar, others used 100 per cent Textalized material. In the latter case the fabric had a much better stretch, bulk and cover, but it was considerably more expensive due to low yield and high yarn cost. The stretch, yield and cover depend largely on finished width. The wider the fabric framing the higher the yield but lower the stretch.

Here are some examples of constructions involving Textalized yarn: 1. 100 per cent, 30 denier Textalized nylon jersey yield 6.92 sq. yds./per lb. at 11 inch quality; 2. 100 per cent, 30 denier Textalized nylon jersey yields 4.61 sq. yds./per lb. at 7.6 inch quality; 3. 100 per cent, 30 denier Textalized reverse jersey yield 7.27 sq. yds./per lb. at 9 inch quality; 4. 70 denier Textalized and 15 denier nylon jersey yield 4.10 sq. yds./per lb. at 8.25 inch quality; 4. 30 denier Textalized and 30 denier nylon jersey yield 6.29 sq. yds./per lb. at 9 inch quality; 6. 30 denier Textalized diamond mesh fabric jersey yields 14.6 sq. yds./per lb. at 7 inch quality and 2 x 55 inch finished width.

**Curling**—The process of curling yields a non-torque bulk yarn of considerable stretch powers. The yarn is generally known under the name Agilon although in Europe other trade names have been given to it as well. (80). Curling is produced by passing a thermoplastic material over the edge of a sharp

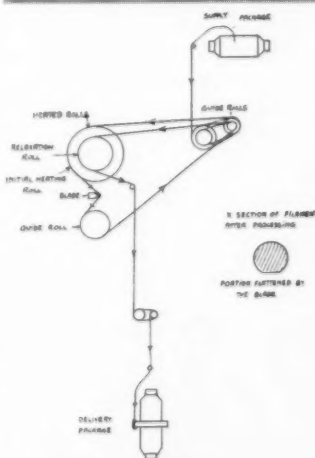


FIGURE 3

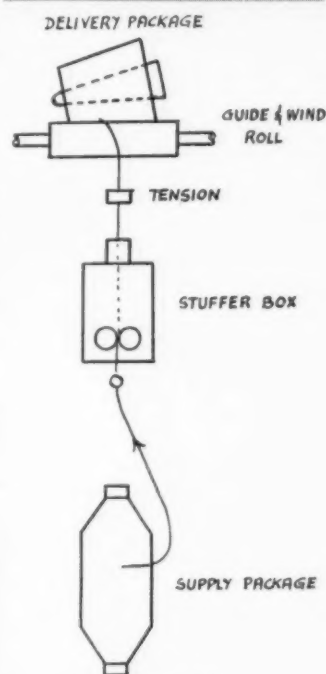


FIGURE 2A

blade which crimps it into a helical form. The principle of curling and the equipment used for this purpose is illustrated on Fig. 3.

Yarn, either mono- or multi-filament, is taken off the supply package and passed around the initial heating roll which plasticizes the material. It is then guided across the edge of crimping blade where the curl is induced (Brit. Pat. 761,084). From there, the yarn is lead to another heated roll where relaxation and curl setting takes place. As the heat-plasticized filaments slide over the edge of the blade, they become flattened at one end. This causes their skin to shrink more on one side than on the other to generate the curl. The yarn leaving the blade assumes an almost a perfect helical or spring-like configuration which gives a great deal of elasticity.

The diameter of the helix is in the range of 1/50-1/30 inch. The direction of helix reverses itself at frequent intervals so that the yarn is virtually free of torque. This facilitates handling of Agilon at warping and knitting level since there is no tendency to loop or snarl and only a limited tension suffices to keep the ends under control.

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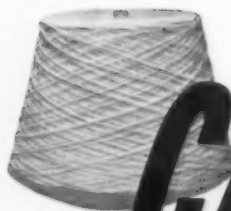


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The crucial component of the Agilon curling unit is the blade. Its edge must be ground to a precise radius within fine and consistent limits. The curling efficiency depends on the angle of the blade surfaces and its radius of curvature. The blade on some systems is kept heated to enhance curling action. In general practice, however, it is left at the ambient temperature.

Because of the need to replace the blades after every doffing of wound-up packages, the supply of such finely machined parts posed a difficult problem. It was solved by utilizing standard razor blades ground and blunted to requisite radius.

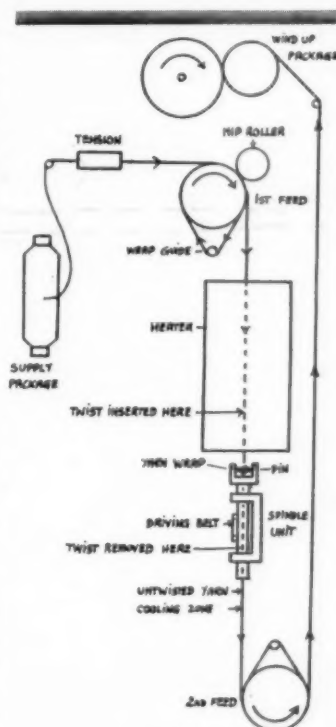
The Agilon process has the highest output of all those used in production of stretch yarns. At a linear speed of 180 feet/minute, it yields 10.5 pounds of 70 denier material per unit per 168 hour week. Speeds of 320 feet/minute are now practical and 650 feet/minute is planned for the future. On new machines it is possible to process six ends simultaneously per one curling unit with a corresponding increase in productivity.

The advantage of Agilon lies in its bulk and stretch remaining dormant throughout fabric manufacture only to be developed in the finishing stage. Once the goods are immersed in scouring solution, the crimp latent in the yarn asserts itself as to impart the fabric bulk and elasticity. On account of fabric consolidation taking place on scouring, it is necessary to make an allowance for it by knitting the goods at a slack quality.

Agilon has been used in the warp knitting industry on an experimental scale only, although its handling does not pose any serious problems (81).

Several fabrics endowed with attractive surface effects like crepe and "tree bark" have been developed. The price of such fabrics, however, was more than the market could bear. European tricot manufacturers displayed a fairly keen interest in potentialities of Agilon. They even went as far as promoting it at the Brussels Exhibition where a fashionable Agilon tricot dress was shown.

The last type of non-torque yarn to be mentioned here is Helanca — NT type. This is a stretch material produced on a



**FIGURE 4**

false twist principle (see next chapter) in a way as to inhibit the objectionable characteristic, from warp knitting standpoint, to torque yarns; namely lack of balance and tendency to snarl. Consequently, there is neither need to balance the yarn by doubling it with another end of opposite twist direction, nor necessity to prepare the warp in a manner as to render the fabric free from distortion and bias.

**TORQUE MODIFIED YARNS** — This class of yarns is produced by throwing/doubling, false twisting, and friction twisting. The false twist process is now almost universally used to the exclusion of the throwing/doubling method. The latter is falling into disuse because of low yield per spindle and multiple handling operations it involves.

The forerunner and still best known of all torque stretch yarns is Helanca. This yarn is now available in several forms with bulk, stretch, surface characteristics, etc. geared to meet requirements of specific end uses, like underwear, outerwear, gloves and hosiery.

Helanca was originated by a Swiss firm Heberlein & Co. A.G. in 1932. The process was then applied to cellulosic material

(mainly viscose) with the aim of imparting them with a wool like crimp, appearance and hand. This was accomplished in three stages, Z twisting, setting and untwisting. Recognizing the potential of twist modified yarns, Heberlein took out key patents in principal countries. U.S. Pat. 2,019,185 (1936), British Pat. 397,064 (1933), German Pat. 618,050 (1935). A subsidiary company was formed by Heberlein for commercial exploitation of the process by licensing its use on royalty basis. In U.S. this is handled by the Heberlein Patent Corp. N. Y.

The licensing arrangements and conflicting patents obtained by various concerns both here and abroad became a subject of drawn out litigation. The chronology of patents, their originators and coverage is discussed in Oct. 1960 issue of *Journal of Textile Institute*, p. 611.

British Celanese also made an important contribution to the development of torque yarns with the introduction of stretch acetate produced by false twisting. This process was applied to single yarn with steam acting as the setting agent (Brit. Pat. 424,880 of 1935).

There are two basic methods of producing Helanca:

- Conventional, where the yarn processed in batches undergoes several operations.
- Continuous, in which the yarn is manufactured in one continuous sequence.

**Conventional method**—Processing is carried out on standard up-twisters and involves five individual steps.

1. Supply of yarn on producers pirns is divided into two equal batches. One is twisted in "S" direction and the other in "Z" direction, both receiving the same twist in terms of tpi. The amount of twist may reach 125 tpi depending on denier. For example, for 70 denier nylon the requisite twist would be about 75 tpi. The twist to be inserted in a given denier yarn may be calculated from the following formula:

$$\text{TPI} = 96 - \frac{\text{Denier}}{3}$$

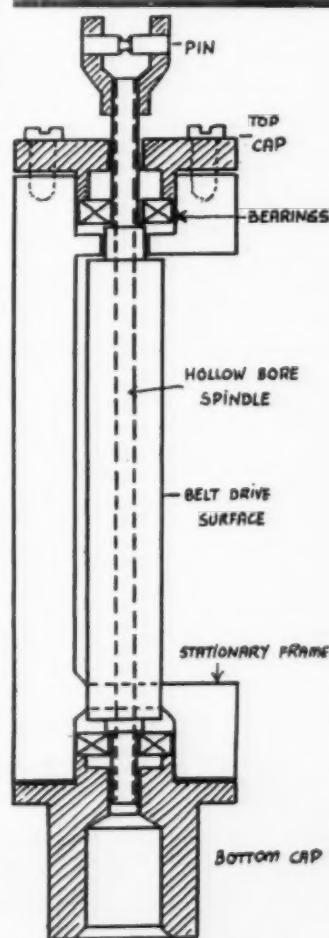
2. The thrown yarn, now on uptwister packages, is put into a steam autoclave in order to fix the twist in by heat setting. The hard twist exercises a crimping action on the yarn

while autoclave treatment renders it permanent.

3. After twist setting, the packages are replaced on the uptwister and the yarn thrown in reverse direction as previously to remove all twist. As a result, the crimp in the de-twisted filament bundle will cause it to bulk up and the unbalanced torque created through de-twisting will confer the yarn appreciable stretch characteristics. The unbalanced torque, however, will also improve the objectionable tendency of snarling the yarn and distorting the fabric.

4. Because of the snarling hazards attending the yarn, it is a common practice to balance it by doubling with another yarn strand of opposite twist direction. Thus, one de-twisted end thrown previously in S direction is doubled with another of Z direction. Only a few turns (up to five) in either S or Z

(Continued on Page 11)



**FIGURE 4A**

supernatural news  
...from DOW!

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# announcing new ZEFRAN<sup>®</sup> 1207 *acrylic fiber*

...for blending with wool

◆ Zefran\* 1207 has improved dyeing characteristics for blends with wool, permitting deeper shades and a broader range of colors.

◆ Zefran 1207 allows union dyeing of blends.

◆ Zefran 1207 and wool will appear in fabrics for menswear Spring '62.

◆ Zefran 1207 and wool is now in yarns for men's and women's knitwear.

Zefran 1207 is a specific result of the continuing program for the improvement of synthetic fibers being conducted by Dow's Textile Research and Development laboratories.

For technical information about this acrylic staple, write to or call: Textile Fibers Department, The Dow Chemical Co., 350 5th Avenue, New York 1, N. Y.

\*Zefran is The Dow Chemical Company's trademark for products including fibers, yarns, fabrics.

THE DOW CHEMICAL COMPANY

**DOW**



direction are inserted on doubling. The process of doubling does not affect the bulk and stretch properties of the yarn while rendering it fully balanced and stable.

5. The doubled material is finally coned, ready for use in knitting. The resultant Helanca yarn exhibits remarkable crimp, bulk, elasticity and elongation. The latter may on fine deniers reach a value of 500 per cent and bulk up to 300 per cent. This is due to the action of crimp set in each component strand and tending to bring them back to their relaxed dimensions when the yarn is stretched. The recovery from stretch is relatively slow and gradual. It lacks the instantaneous "snap back" of rubber or synthetic elastomer products.

The disadvantage of the conventional Helanca process is very low output and multiple handling of yarn. With the up-twister running at 10,000 rpm, the production per spindle on 70 denier nylon is less than one pound per 168 hour week.

**Continuous method**—Processing is carried out on continuous basis utilizing the so-called false twist principle. This term signifies that no real twist of permanent nature is inserted in the yarn. The effect produced by false twisting may be likened to the action of rolling a piece of rigidly strung twine between the thumb and forefinger. For every turn of S twist put into the section of twine above the finger, there is a turn of Z twist inserted below them. The net effective result is zero tpi which becomes apparent as soon as the finger nip is removed and the twine allowed to unwind, so reverting to its original twistless state.

In the manufacture of Helanca, false twist is applied by means of a high speed hollow spindle. Processing of materials on a false twist basis is simple. First, the yarn is softened in a heater box just before entering the spindle, then it is given a large number of turns per inch and cooled upon emerging from the spindle tube. The twist is set into the heat plasticized yarn just before entering the spindle and removed when the yarn issues out of the tube at which instance it is colled to prevent heat build-up in the delivery package (see Fig. 4). This has

the same effect as detwisting the yarn in a conventional process. Thus, the triple operation of twist insertion, heat setting and removal is carried out simultaneously and continuously.

A nip roller is provided at the first feed to prevent the twist from running back into the supply package. The tension of yarn passing through the spindle is regulated by selecting a suitable speed ratio between the first and second feeds. Actually, the yarn is overfed by up to 10 per cent to allow for shrinkage due to insertion of high twist and also for relaxation of materials on exposure to heat.

There are three principal variables affecting the physical properties and appearance of Helanca yarn and the knit fabric produced from it:

- The number of turns per inch.
- Thermal treatment — the heat setting temperature and time of exposure to heat.
- Yarn tension and percentage of overfeed.

Construction of a spindle unit is shown on Fig. 4A. An average spindle is about 2.5 inches long and has a half-inch outside diameter. It is mounted on a spring loaded swing arc which keeps it in contact with the driving belt. The latter rotates the spindle tube through frictional contact.

The yarn is wrapped once around the pin at the top of the spindle before passing into its hollow center. By suitable design of spindle bearings and mounting, it was found possible to bring the operational speeds

up to 70,000 to 80,000 rpm. On one machine a rate of 175,000 rpm was claimed to have been reached (82), which is exceptionally fast for a friction operated device. Frictional drives, however, efficient as they are, do have their limitations due to belt slippage, generation of heat, and fluctuation in rpm level. Therefore, machine builders in their search for faster driving arrangements turned to individual spindle motors. A driving unit has been evolved where the spindle serves as a rotor axle of a miniature three-phase motor. The motor revolves on special compressed air bearings to eliminate the need for lubrication and reduce friction drag to a minimum. Motorized spindles now operate at speeds of 180,000 rpm. In some cases speeds of 250,000 rpm have been attained (83).

Output of the false twist throwing machine is directly proportional to spindle speed and inversely proportional to denier. Also, the processing speed of the yarn in terms of feet per minute is inversely proportional to the denier, since the number of tpi necessary to produce the stretch characteristics. For 70 denier material at the spindle speed of 140,000 rpm and yarn processing rate of 145 feet per minute the output is 7.7 pounds per 168 hour week.

Yet another approach to boosting spindle productivity is in the friction twist device (84). Here the yarn is twisted through frictional contact with the in-

terior surface of a rotating tube or bushing (Fig. 5). The latter is only 1.25 inches long and half-inch inside diameter. Its inner walls are lined with elastic material which rolls and twists the yarn passing across its surfaces. Because of diameter ratio between that of the tube and the yarn, even slow rotational speeds will insert a very high number of turns per inch.

The friction twist method enables processing of yarn at an exceedingly fast linear rate. For example, on 20 denier material, the speed of processing is 600 feet per minute with the twister tube revolving only at 5,000 rpm. In order to run the 20 denier yarn at this linear rate on an orthodox false twist spindle, the latter would have to make over 1,000,000 rpm. Linear rates of up to 1000 feet per minute have been reached on fine deniers however, the processing speeds of heavier denier (e.g. 70) materials are only about 250 feet per minute. The reason for this is the inability to heat set the yarn fast enough as it passes through the heater box. The heavier the denier, the longer the time the yarn must be exposed to heat and the higher the temperature inside the heater box. To run a heavy denier material at high linear speed would necessitate a very long heater box (to increase exposure time) and elevated temperatures difficult to maintain at a uniform level. So much for manufacture of Helanca products.

Other than the Helanca system, stretch yarns are being made by several methods on equipment designed by machine builders or large mills. Through licensing agreement with the Heberlein Patent Corp. the yarn produced by these various methods may be designated and labelled Helanca, providing the material meets the quality and performance standards set up by Heberlein.

Each type of equipment used in these methods, although based on the false twist principle, does render a stretch yarn of somewhat different properties. The best known of such yarns are perhaps Flufon (Marionette Mills) and Superloft (Universal Winding Co.).

(Continued on Page 28)

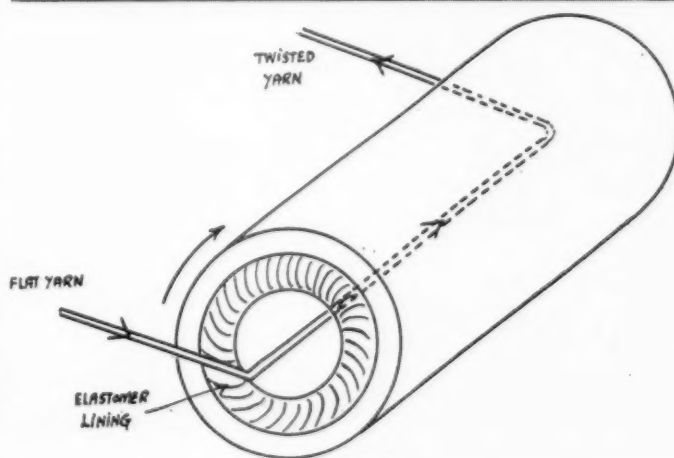


FIGURE 5

*in fallspun yarns, value is a known element*



"VALUE" IS A KNOWN ELEMENT in Fallspun Yarns . . . protected by exhaustive quality control through every step of manufacture. When your knitwear profits depend on the value you get from your yarn investment — specify Fallspun! You're assured of top value in any yarn classification.

FALLSPUN YARN BLENDS are created to any specification from vicuna, guanaco, alpaca, cashmere, angora, mohair, all fur fibers, specialty wools, and synthetics of every type.



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D. F. Swain Co., Chicago, Ill.

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## Mill News

### RMR Merges Shipping, Receiving Departments

LOS ANGELES, Calif. — Faster, more efficient delivery of Rose Marie Reid swim suits will result from the company's consolidation of its receiving and shipping departments into a new warehousing department under the direction of a newly-appointed warehousing manager.

John Edward Grant, the new manager, a veteran of eight years with the Los Angeles swimwear manufacturer, will report directly to the office of Paul Haberfield, RMR president.

Haberfield said the consolidation brings about greater flexibility, efficiency, and economies by taking advantage of the fact that the receiving and shipping departments generally peak at opposite times and by placing the combined operation under Grant's supervision. As former plant engineer, he has been closely associated with the planning of the physical handling systems serving the two departments.

### Harn Corporation To Sell 150,000 Shares To Public

WASHINGTON, D. C. — Harn Corporation, Cleveland, which in 1960 introduced a line of children's knitwear, infants' sleepwear and adult knitted sportswear as an addition to its manufacture and sale of padded and quilted products and bassinet accessories, has filed a statement with the Securities and Exchange Commission seeking registration of a maximum of 150,000 shares of common stock.

The stock is to be offered for public sale in part by the company, through a rights offering to shareholders, and the balance, amounting to \$300,000 after underwriting commissions, by Herman Cohen, a director.

The rate of subscription and record date, subscription and offering price and underwriting terms will be set at a later date. J. R. Williston & Bean heads the list of underwriters, according to the prospectus filed with the S.E.C. Certain of the controlling stockholders have waived rights with respect to 299,895 outstanding shares.

Of the estimated \$1,200,000

net proceeds from the company's sale of stock, \$430,000 will be used to repay obligations to banks incurred to retire trade accounts payable; \$500,000 for the retirement of trade accounts payable and for the purchase of raw materials; \$50,000 for the purchase of plant equipment and leasehold improvements. The balance of \$220,000 will be added to the company's general funds and used as required for working capital purposes such as raw material purchases, payment of trade accounts, wages and salaries, and advertising and promotional expenses.

In addition to certain indebtedness, the company has outstanding 525,613 shares of common stock, of which Rudolph Cohen, president, Arnold Cohen, executive vice president, and Herman Cohen, the selling stockholder, own 18 per cent each, and management officials as a group own 65 per cent.

### Jantzen, Inc., Occupies New Office Addition

PORTLAND, Ore. — Jantzen Inc. has completed and is now occupying its new half-million dollar, two-story office building at N. E. 19th Avenue and Sandy Boulevard, adjoining the general offices with entrance on N. E. 19th.

The addition is being used primarily for executive offices.

It also has a 15 by 30-foot swimming pool, to be used by the designing and merchandising department for the testing of new swimwear and swimwear fabrics.

The new quarters provide 22,000 square feet of additional space to the administrative headquarters of Jantzen's worldwide operations. The attractive contemporary design, utilizing curtain wall construction, is by Portland architect Richard Sundeleaf.

### Electro-Knit Previews Colors At Leather Show

Electro-Knit Fabrics previewed its spring colors at a reception and fashion show sponsored by the Leather Industries of America in the Statler-Hilton Hotel.

The nine colors selected for presentation were from a collection numbering in the hundreds.

Distinctively  
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COTTON  
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For a truly new look in cotton knits—a look that captivates and holds consumer appeal and satisfaction—couple styling with style-wise colors. Your creations deserve the distinctive color brilliance, beauty and permanence provided by yarns package-dyed by Globe.

Globe does package dyeing on tubes, skein and warp dyeing, warp bleaching and sizing.

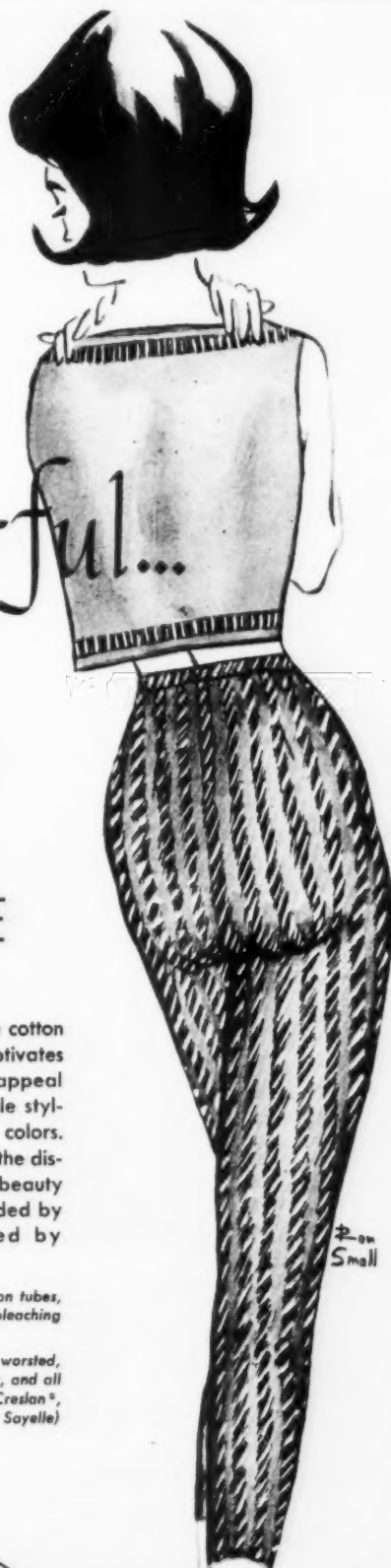
Yarns processed include cotton, worsted, linen, blend and novelty yarns, and all synthetics including Arnel<sup>®</sup>, Creslan<sup>®</sup>, Orlon<sup>®</sup> (Turbo, Hi-bulk and Sayelle) and Zefran<sup>®</sup>.



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## Yarn Suppliers

### Glen Raven Forms Selling Organization

Allen Erwin Gant, president of Glen Raven Cotton Mills, Inc., Glen Raven Knitting Mills, Inc., and Glen Raven Silk Mills, Inc., announced the formation of Glen Raven Mills, Inc., to handle sales of the various Glen Raven units.

Mr. Gant is chairman of the board of the new company. James P. Kinard has been elected president and treasurer and will serve as chief executive officer.

Harold G. Dean will be executive vice president and William H. Sutfenfield Jr. vice president and secretary.

Glen Raven Mills, Inc. has sales offices at 1430 Broadway, New York City; 222 West Adams St., Chicago, and San Fernando, California.

The parent company operates seven plants in North Carolina and one in California producing woven and knit fabrics for men's and women's apparel, fabrics for industrial and household uses, ladies' nylon hosiery, Pantilegs and sale yarn.

### Quarterbloods Back In Steady Supply

BOSTON, Mass. — The call for quarterblood wool yarns has settled to a steady pace again with adequate supplies available following an unusually heavy demand for this grade that developed early in May and caused late deliveries.

Volume of knitting yarn business is in worsteds, 80/20 blends 100 per cent wool of 54 grade, according to Summer Street sources. Some action was noted in specialty fibers and there are adequate supplies on hand of types most often used. There is a general feeling that there is room for small mills devoted to these fibers and a number of little operations with from two to a dozen machines have been cropping up around here recently.

Among the specialties, the strength appears to be in Shetlands, alpaca and fur blends. Interest has been increasing lately in camel hair derived from Outer Mongolia which must be

acquired from the British. Yarns of Capetown and Australian lamb's wool are fairly active, but yarns spun from garnetted stocks are most wanted. Mohair is far more important as an export item than it is to local knitters with the bulk going to Britain. One supplier reports a sale of vicuna to a hosiery house at \$34 per pound. Interest in cashmere is occasional.

Among the synthetics, the life is in the Orlons, Acrilan, and Creslan. Some quarters find a good demand for Antron, and Orlon Sayelle is becoming more active. The relatively stable prices of synthetics make possible long range buying, and mills running 100,000 pounds or more at a time create the volume of the yarn market which is in worsteds and synthetics.

Great changes have come about in Summer Street since World War II. The weaving industry, once a giant consumer, is practically extinct in this area and Ed Kirkland, Schaeffer, Pfizenmaier & Kirkland, said that knitters now constitute 90 per cent of the trading. Mr. Kirkland said the knitting industry has outgrown hand-to-mouth buying habits that create peaks and valleys. He also said that the advantages of year-to-year buying, which would insure continuous supplies, would far outweigh gains and losses through the fluctuations of the market, which a survey over a twenty-year period prove insignificant.

Norman L. Wilson, Ames Textile Corporation, cited a trend to South American alpaca for the manufacture of reverse links and links fabrics.

### Five Suppliers Admitted To Pekoma Membership

PHILADELPHIA, Pa.—The Pennsylvania District, Knitted Outerwear Manufacturers Association has admitted five firms to associate membership, raising the Association's associate membership to the highest number in its history, according to Edward B. Shils, executive secretary.

The firms are: The Chemstrand Corporation; Deering, Milliken & Co.; Glen Raven Mills, Inc., N. Y.; The Kent Manufacturing Co., and J. P. Stevens Co., Inc.



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## HARMONY...THE SECRET OF GLEN RAVEN'S YARN DIVISION

There are several soloists (departments) in Glen Raven's Yarn Division: a Research Color Laboratory; a Research Spinning Laboratory; a Modern Dyeing Plant. Yarn Division products include Super Bulk, Super Spun and Glen Star. Yet, despite their individuality, these departments perform magnificently in concert. From fiber to finish...everything is control-coordinated.

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 MOHER ASSOCIATES, 44 Washington Street, Wellesley Hills, Mass. (Cleveland, Ohio and New England)/SWIRLES & CO., 3222 Sunset Blvd., L.A., California (for West Coast)  
 RUSSELL GANT CO., Burlington, N. C. (for South)



## Knitted Yardgoods

### Design Diversity On Algro's Cotton Knits

Algro Knitting Mills, suppliers of knitted fabrics to the infants' and children's, men's and women's trades, offers a wide variety of cottons for each of these categories.

Colors that sold best for the men's trade for fall and winter, 1961 were clear, dark shades of blue, brown, green and rust. Gold, although still popular, fell off slightly.

For women, bright colors sold nicely. Of these, royal blue, emerald green and magenta did very well. Brown with a taupe cast also received the attention of manufacturers.

Bright shades were favored also for children's wear. These appeared alone or as the highlight of a striped or printed fabric.

In men's wear, the upsurge in bowling and golf shirt popularity created a demand for a LaCoste-type fabric knitted by Algro. This material, and others in the line, is treated with a resin finish.

In general, the cotton knit

fabrics show great variety and include many variations on stripe, self-texture and other design themes.

Stripes are plain and novelty, pin to awning, all-over same size or multi-sized and come in clear and heather tones.

One interesting striped fabric has a center pin stripe around which a balanced arrangement of multi-color and multi-sized stripes are formed. Each of these groups in turn forms a very large grouping that alternates with a medium width stripe of a neutral shade to offset the fancy portion.

Multi-colors are in the form of regular, argyle and Scotch plaids and checks of all sizes, including small window pane checks. Geometrics are numerous and varied and self-textures are important. Herringbone construction comes in many sizes in both one and two colors. Most other novelty textured designs are geometric in nature.

Many of these are coarse gauge and thus achieve a three-dimensional effect. Other dimensionals are created with a thread running on the top of a fabric to form a superimposed design.

Multi-color jacquards and tweeds also make up a part of this line.

For infants and children the usual array of white and pastel shades predominate on flat, fine gauge jersey. Patterns are delicate designs on animal motifs.

## Knit Laminates

### Pernick Steamer, Slitter Used In Reeves Bros.

The steaming, framing and slitting machine pictured in the June 26 issue in the photo sequence on how Reeves Bros. laminates knitted cloth to Curon foam was erroneously disclosed as a Tube-Tex machine. Actually the unit is manufactured by Joseph Pernick & Co., Maspeth, L. I.

### Summit Plastic Industries Appoints Sales Manager

SPRINGFIELD, N. J.—Albert P. Falk has been appointed sales manager of the textile laminating division of Summit Plastic Industries. He will be in charge of sales involving laminations of knitted and woven fabrics to polyurethane foam for the apparel trades.

### MacDermott Appointed Sunbury Sales Manager

Robert M. MacDermott has been appointed sales manager of Sunbury Textile Mills, Inc. He will handle sales of dyeing and finishing of circular knit fabrics and lamination. The firm is a Reeves licensee.

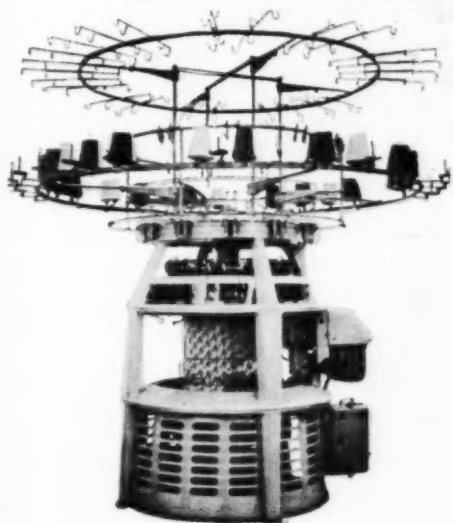
Mr. MacDermott was manager of the knit fabrics department of Greenlaw Inc., sales agents for U. S. Rubber Company.

## Trade Education

### Scholarship Established Honoring Walter Larkin

PHILADELPHIA, Pa.—A \$5,000 scholarship has been established at the Philadelphia College of Textiles and Science by Singer-Fidelity, Inc., Philadelphia manufacturer of seamless knitting machinery, to honor Walter Larkin, recently deceased senior inventor of the company. The scholarship will be known as the Walter Larkin Memorial Scholarship.

Mr. Larkin, who died in November, 1960, was the inventor of the first electronically controlled seamless hosiery machine.



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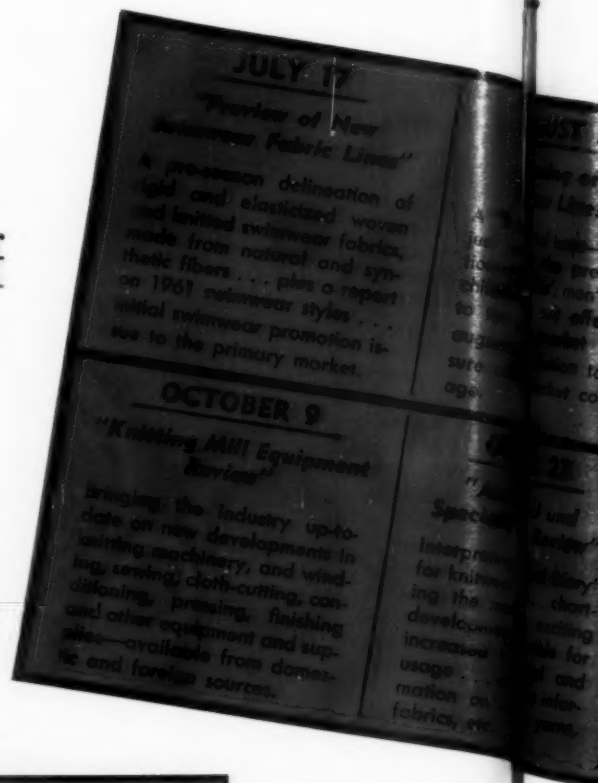
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<p><b>AUGUST 7</b></p> <p><i>"Knitting as a Hobby"</i></p> <p>A well-illustrated presentation of men's and women's offerings... to include cover...</p>	<p><b>AUGUST 14</b></p> <p><i>"Ribbons, Buttons &amp; Trimmings Review"</i></p> <p>A comprehensive discussion—and extensive pictorial display—of new types of ribbons, buttons, threads, knitted trimmings, accessories and zippers for knitwear and underwear.</p>	<p><b>AUGUST 28</b></p> <p><i>"Dyeing and Wet Processing Review"</i></p> <p>Reviewing all late developments in processing and dyeing of natural and synthetic yarns and knitted fabrics... emphasis also being given to chemicals and dyestuffs used for yarns and knitwear.</p>	<p><b>SEPTEMBER 11</b></p> <p><i>"Knit Shirt, Swimwear &amp; Fabric Lines"</i></p> <p>The major issue for knit shirt manufacturers catering to the primary market... also featuring knitted and woven fabric offerings... summary promotional issue for swimwear firms... Bonus Distribution—2,000.</p>
<p><b>OCTOBER 28</b></p> <p><i>"Knitting and Knitwear"</i></p> <p>A "story" chart tracing the history of knitwear for men and women.</p>	<p><b>OCTOBER 30</b></p> <p><i>"Factoring &amp; M.M. Financing Review"</i></p> <p>Continuing our editorial program to explain the mechanics of factoring and how knit goods manufacturers and jobbers can profit from its use... plus authoritative information on inventory and equipment financing.</p>	<p><b>NOVEMBER 6</b></p> <p><i>"Synthetic, Novelty &amp; Blend Yarns Review"</i></p> <p>Pin-pointing the great technological developments streaming out of laboratories of fiber and yarn suppliers... stressing the role of synthetics, novelties and blends for knitwear... "An Encyclopedia of Synthetic Information."</p>	<p><b>NOVEMBER 20</b></p> <p><i>"Wholesale Spring Sweater Lines"</i></p> <p>A review of the sweater lines which mills and selling agents catering to the wholesale trade will be offering for the Spring 1962 season... summary promotional issue for knit shirt producers... Bonus Distribution—2,000.</p>
		<p><b>DECEMBER 18</b></p> <p><i>"Annual Review and Forecast"</i></p> <p>An overall report of the operations of the knitted outerwear trade and its allied supply fields during the past year... presenting "The Outlook for the New Year"... an invaluable "Guide to Future Planning."</p>	

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## Synthetic Fibers

### Yarn Count Device Issued By Cyanamid

A pocket-sized, slide-rule type calculator for conversion of common yarn numbers to the new tex universal yarn numbering system has been prepared by the fibers division of American Cyanamid Company.

The calculator eliminates computation in converting denier numbers, cotton and worsted counts or woolen runs into tex units, a standardized numbering system proposed by the American Society for Testing Materials for all branches of the textile industry.

For mills using a variety of fibers, the tex system is said to provide a single basis for measurement of yarns, regardless of the fibers. The lack of interchangeability in measuring yarn size, fineness, linear density or number has long been a problem.

Tex numbering measures the mass of the yarn in grams, divided by its length in kilometers, so that the units are based on grams per thousand meters, and one unit is one-ninth of a denier unit.

### Chemstrand To Expand Nylon Yarn Facility

Plans to expand nylon yarn capacity at the Chemstrand nylon plant at Greenwood, S. C., by 200 per cent, were announced by Edward A. O'Neal, Jr., president of The Chemstrand Corporation. The Greenwood plant has been in commercial operation since last October. Construction of the expanded facilities is scheduled for completion by May, 1962.

"The expansion is necessary," O'Neal said, "because of continuing market demand for nylon textile yarns." He noted that this is the fifth major expansion in nylon capacity announced by Chemstrand since the corporation began producing nylon in 1953.

"Much of this increasing demand for nylon," O'Neal said, "is due to advancing nylon technology. Such innovations as texturing, modified cross-section yarns and other developments coming out of such facilities as our Nylon Development Center and our Applications Research

and Service Department at the Chemstrand Technical Center, have given nylon a versatility that adapts it to a wide variety of end-use products."

Chemstrand also has a nylon plant at Pensacola. The Corporation's Acrilan acrylic fiber plant is located at Decatur, Alabama. Chemstrand is a subsidiary of Monsanto Chemical Company.

### Beaunit Fibers Division Appoints 5 Managers

Norman H. Polonsky, vice president for Beaunit fibers sales has announced the following appointments in the fibers division:

Richard I. De Vine, product manager, tire yarn and its industrial uses; C. R. Blossom, product manager, viscose rayon textile filament yarn, tow, staple and novelties; Lon Nave, product manager, American Bemberg yarns; Victor Bez, merchandising manager for all fibers; and M. Heinzmann, export manager for all fibers.

All will report to C. K. Watson, general manager of fibers sales and merchandising.

### Dyes & Chemicals

#### Du Pont Dyes Division Names Chicago Head

WILMINGTON, Del.—Francis L. Shackelford, Jr., has been appointed manager of the Chicago district sales office of Du Pont's dyes and chemicals division.

He succeeds J. A. Turner who is retiring at the end of August after more than 42 years with the firm. He will remain as a consultant until his retirement.

Mr. Shackelford, who became assistant manager of the Chicago district office last year, has been with the company since 1939.

#### Crest Chemical Names Charles Tier As Chief

NEWARK, N. J.—Charles A. Tier has been appointed chief chemist of the textile and industrial laboratory at Crest Chemical Corporation.

It has specialized in the development of chemicals for the dyeing and finishing industries, including organic sequestering agents, dye-fixatives, dye assistants and carriers, phosphated and sulfonated nonionic surfactants and non-yellowing softeners.

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## TO Color-Correct Dyeing OF

### ALL KNITTED FABRICS (Synthetics & Blends)

Keystone special processes

assure color uniformity,

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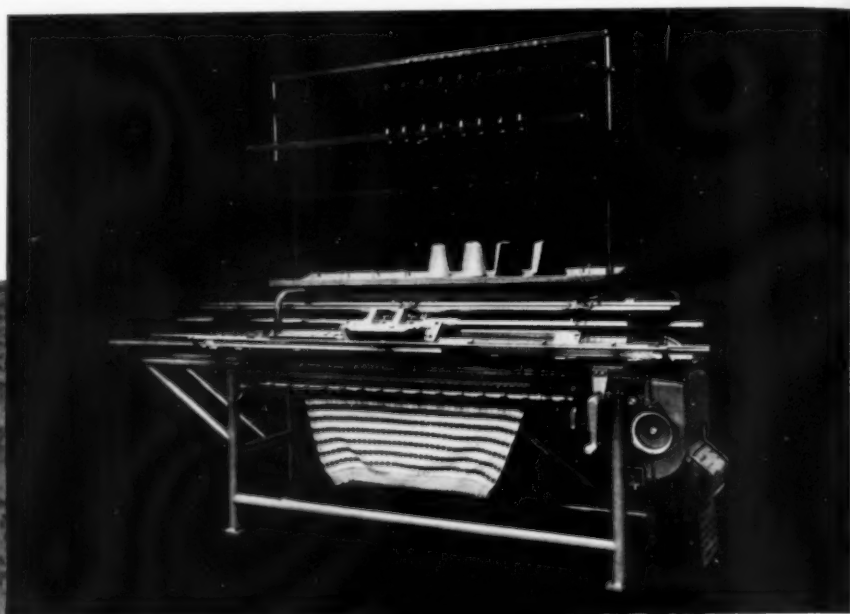
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## Women's & Misses'

### Fur And Leather Trim Novel Knits By Gernreich

By ILANA HIRSCH

Rudi Gernreich's latest designs for Harmon Knitwear, Marinette, Wis., revolve about a few simple themes that result in a stunning collection of dresses, ensembles and sportswear with a definite look of the future. This line is directed toward those who dare to be a bit different but still wish to remain within the range of good fashion, and in its entirety emphasizes Mr. Gernreich's belief in the classic.

Only two constructions—a flat sharkskin and a bulky shaker knit—are used. Necklines are eased, tied with a scarf or fur trimmed. Hemlines are slightly higher than those of a year ago while waistlines are dropped a bit. The allover silhouette is straight and sophisticated. Fabric designs fall into solid, large, close polka dots, and fine two-color diagonal stripes. It is around these basics that the line has been created. Avant garde combinations of patterns such as polka dots and stripes blend perfectly under the skillful hand of Mr. Gernreich. Asymmetric details including one-side stripes are another prominent feature of the line. Fur and leather are utilized for trim and pure design purposes.

The long stemmed look is reflected in the sportswear segment where a single silhouette—the classic man-tailored shirt worn outside tapered slacks—is basic. Heather gray flat sharkskin, a two-color diagonal stripe and Gernreich's large polka dots are the three fabric designs that the used for the shirt and tapered slacks.

Gernreich's bulky sweaters, if they do not grow into full length dresses, generally stop at a point which defines them as tunics. Asymmetric color interest comes into focus on both the sweaters and sweater dresses in two ways. On a cardigan, whose left side is gold and whose right side is black, a red stripe from neck to hem bisects the black side only.

Another subdivision occurs on cardigan and pullover styles

where one side is solid orange and the other is striped boldly in red, light green and olive.

One of the most unusual collars that Gernreich places on his sweaters as well as dresses is a bulky cowl in front which extends to a casually tied scarf on one side.

Bulk is suggested on one sweater through large vertical ribs which also convey the feeling of a self-stripe. Stylewise, this number is a long sleeve scoop neck slipon.

Perfect as the liaison between sportswear and dresses is the culotte dress. Here, the aforementioned shirt blouse is designed in polka dots and worn over diagonally striped culottes.

Design combinations are frequent in the dress collection. A solid area may be juxtaposed with stripes or polka dots, but even more unusual is the use of the last two together. An outfit combining three motifs has a skirt and sweater look in light green and olive. The three-quarter sleeve blouse is solid, the tied neckline scarf polka dotted and the full skirt is in the diagonal stripe.

More conservative is an Orientally inspired tunic dress, the overpart of which is designed in large polka dots while deep side slits reveal an under area in solid color.

On a sheath with a scarf tied neckline and large hemline flounce, the main dress body is in navy and white diagonal stripes and the flounce and tie are in large polka dots—also in navy and white.

### NEKOMA Seminar

### Brandwein Outlines Foundation's Pgm.

(Continued from Page 1) across the country. This, he said, is in addition to paid advertising in the trade press, the purchase of advertising on TV and radio and the use of syndicated cartoon services and other feature mats in daily newspapers.

"It is important to note," Mr. Brandwein emphasized, "that none of the material that we distribute is sold. All of it is given to retailers without charge. This point is stressed because many trade groups try to get some financial support for their activities by selling materials to stores."

## NOW AVAILABLE #6 Width Ribbons—For Orlon®—Wool Bulkies

Many leading knitters are also successfully using this type for OUTER FACINGS and TRIMMINGS!

**SPECIAL NOTE:** Our new dye house is open enabling us to give you better than ever service on DYED-TO-MATCH RIBBONS.

Also available:  
Regular #3  
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**ORLON® ACRYLIC — FUR BLENDS — LAMB'S  
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300-322 BUTLER ST., B'KLYN 17, N. Y. • MAIN 5-2700, 1913

## Knitters Cop Prizes At Yarn Golf Tourney

By BENN OLLMAN

ELMHURST, Ill.—The Chicago Yarn Men's Club 37th annual golf outing drew a strong turnout July 22, at the Elmhurst Country Club.

A good fellowship dinner held the evening before the outing in Chicago Union's Club heralded the trade group's 40th anniversary. Two of the founding members, O. J. Caron, Caron Spinning Company, and Frank W. Kingsley, attended the outing.

Yarn club officers include, Iver Rolfe, Morgan Dyeing & Bleaching Company, president; George Veness, Frank & Veness, vice president; C. M. Patterson, C. M. Patterson Company, secretary, and B. P. Susen, Phoenix Dye Works, treasurer.

First low gross prize for golfing went to Jack Neighbor, Handcraft Co., Inc., for a score of 76. Jim Kemper, Kemper Knitting Mills, copped the first

low net award for his impressive 71 tally.

Other low net winners, were: Ed Kalfahs, Jr., Jersild Knitting Mills; Merrill Layman, Munsingwear; Walter Mode, Better-sox; Ben Jordan, Sellers Mfg. Co.; Lloyd Paul, Zwicker Knitting Mills; Hugh E. Dales, Wigwam Socks; Norm Glauber, Colonial Woolens; David Zwicker, Zwicker Knitting Mills; Jack Hibbott, The Kendall Co.; Ray Peterson, Nelson Knitting; Les Woodworth, Winona Knitting; Bob Cooper, Cooper's, Inc.; Bill Nelson, Universal Fabric, and Jim Jersild, Jersild Knitting Mills.

High gross prize went to Carl Mattke, Portage.

Bo Hutchinson, American & Efid, was in charge of the day's arrangements. His committee aides, were: Golf—Warren Seidel, C. W. Seidel Co.; Prizes—Bud Stocking, Caron Spinning Company; Trophies—Milt Glassenberg, Textile Yarn Co.; Invitations—C. M. Patterson, Jr., C. M. Patterson; Entertainment—Fred W. Frank, Frank & Veness; Publicity—David

(Continued on Next Page)

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Swain, Harriet & Henderson, and Transportation and Housing—Don Brewster, Don Brewster & Co. and Irv Schumacher.

Members and guests for golf and dinner, included the following: Elliot Neal, Aberfoyle; Tom Smotherman, American & Efird; Tom Aldrich, Aldrich & Aldrich; Tom Dwyer, Atlas Underwear; W. R. Austin, Avondale; Henry Pope, Jr., and H. J. Techintin, Bear Brand; H. Michels and Walter Mode, Betersox; John Fried, Blue Star; Don Brewster, Don Brewster Co.; Bill Byrne; O. J. Caron, John Caron, Bud Stocking, Ben J. Zintak and Dick Judge, Caron Spinning Company; Ed Arents, Bob Cooper and Jack Wyss, Cooper's, Inc.; Burton Gale and C. Mielke, Chicago Printed String Company; Bruce Randall, C. N. F. Co.

Paul Boghossian, Jr., Concordia; R. K. Webster, Crescent; Norman Glauber, Colonial Woolen; Dick Rosenfeld; Ray Barth, Diamond; J. B. Frierson, Jr., A. K. Johnson, George Porges, and R. L. Voight, Dixie; D. A. Gest, Richard Mason and Richard Morgan, DuPont; Bob Goldstein, Ray Michaels and Bill Rogers, Eagle Knitting Mills; A. D. Everitt, Everitt Knitting Mills; E. J. Lyman, Fitchburg; Augie Biel, Forster; Henry Stawniak, Firestone.

Lanier Branson, Jr., Fairtex Corp.; Don Harshman, Grove; Milton Haglund, General Printed String; Pres Heistand, Walter Merigold and Jack Neighbor, Handcraft Co., Inc.; Tom Crud-up, Harriet Cotton Mills; A. B. Hammond, Dave Swain, Sr., and Dave Swain, Jr., Harriet & Henderson; Harmon Juster, Harmon Knitwear; Harold Dier-son, Hollywood Vassarette; E. A. Kalfahs, Ed Kalfahs, Jr. and Jim Jersild, Jersild Knitting Mills; Don Jonas, Johnson; Bill Yates, Johnston Mills; Al Livingston, Jordan Mills, Ed Kemper and Jim Kemper, Kemper Knitting Mills; Jack Hibbott, John Karl, Ray Hoey and Bob Vincent, The Kendall Co.; Warren Kent, Kent Mfg.; Joe Hamilton, Madison; Babe Degryse, Harry Loeftgren and Iver Rolfe, Morgan Dyeing & Bleaching; Ed Dunham and Tom Nicholson, L. P. Muller; Carroll Anderson, and M. W. Lehman, Munsingwear; Bill Napier, Napier and Harshman; Ray Peterson and Richard Shelain, Nelson Knit-



A pre-dinner toast. From left, Ben Zintak, Caron Spinning Company; Jim Kemper, Kemper Knitting Mills; Dick Judge, also Caron, and Babe Degryse, Morgan Dyeing & Bleaching Co.



Lugging away the loot. From left, Merrill W. Lehman, Munsingwear; Ray Peterson, Nelson Knitting Co.; Bob Vincent, The Kendall Co., and Leslie Woodworth, Winona Knitting Mills.



Some cheerful disagreement over this score card. From left, Howard Bronson, Portage Hosiery; George Veness, Frank & Veness; Maurice Forseth, Straus Knitting Mills, and Milton Glassenberg, Textile Yarn Co.

ting; Carl Jensen and Frank Lynch, Norwood.

Duke Kimbrell, Parkdale; Bud Patterson and C. M. Pat-

terson, C. M. Patterson; Fred Susen and William Susen, Jr., Phoenix Dye Works; Howard Bronson, Melvin Felt, and Carl Mattke, Portage Hosiery; H. C. Weidner, Powers Mfg.; Freeman Harris, Jim Smith, W. L. Verlenden and John Youngworth, S. C. T.; Carl Schuessler, Sr., Carl Schuessler and Walter Schuessler, Schuessler Knitting Mills; Warren Seidel, C. W. Seidel Co.; Ben Jordan, Sellers Mfg.

Maurice C. Forseth, Straus Knitting Mills; Milt Glassenberg, Textile Yarn Co.; Bill Nelson, Universal Fabric; George Veness, Frank & Veness; Bob Cheseboro, Sr., Bob Cheseboro, Jr., Hugh E. Dales and Ed Moore, Wigwam Socks; Les Woodworth, Winona Knitting; Lloyd Paul and Dave Zwicker, Zwicker Knitting Mills.

## Optimistic Tone Marks Activity In Phila. Area

PHILADELPHIA, Pa.—Optimism prevails among knitted outerwear manufacturers, but for other than obvious reasons. The obvious reason, according to knitters, is that sales activity has picked up even though it is late and the industry appears to be headed for a very good second half. This is a fact to which everyone agrees.

More important, according to off-record remarks, is that the knitted outerwear industry in this part of the country appears to have "shaken itself out."

The recent so-called slump in sales and production has exposed the weak spots and weak companies, and brought about some changes which will eventually strengthen the trade here.

The reasoning goes somewhat as follows: Overall production in men's and ladies' sweaters in the Pennsylvania district has been reduced by about 30 per cent in the last two or three years by the liquidation of some mills, changes in ownership and the discarding of obsolete machinery. This, trade sources claim, has wiped out any potential danger of over-production.

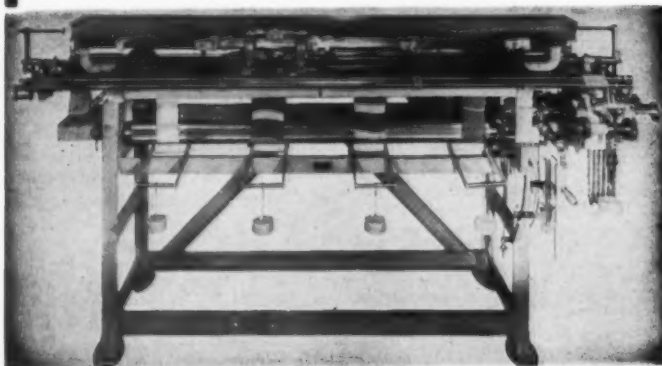
The feeling is that while the industry fears liquidation like a plague and continuously takes  
(Continued on Page 26)



# QUEENS

## MODEL "B" and MODEL "BD"

FULLY AUTOMATIC "V" TYPE  
FLAT KNITTING MACHINES



Designed to produce quality collars, cuffs, tails and other trims for full fashioned and cut and sewn outerwear and entire garment sections with knit-on cuffs or tails.

### FEATURING:

NOW AVAILABLE WITH MULTIPLE  
RACK — UP TO 10 NEEDLES

- High and low butt needle arrangement on both needle beds with a row of push jacks back of both sets of needles virtually doubling possibilities for production of novel patterns.
- Carriage (knitting head) has drop type cam construction on the cams controlling needle and jack action.  
All carriage and machine functions can be controlled and changed at either end of the carriage travel.
- Short, ball bearing roller mounted carriage preserving proper alignment and permitting high knitting speeds while conserving valuable floor space.
- Available as the single lock Model "B" pictured above or the double lock Model "BD" which is virtually identical in appearance and has the same features as the Model "B."
- Standard equipment now includes twelve end electric stop motions, improved "Tractive-Grip" take-down system and electrified counter clock.
- Automatic dual speed drive available for either model for automatic slow down during knitting or loose course, etc.

Your Inquiries Are Invited

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all steps possible to avoid mills from going under, all were inevitable. The men who know about this claim that they were surprised that more plants were not adversely affected.

"This proves that we are a healthy industry, interested in growth and unwilling to milk ourselves dry," said a prominent leader.

He explained that the knitted outerwear industry has, since the end of World War II, taken stock of itself regularly. It has also modernized and reinvested in high speed equipment to help keep unit costs down. The picture of the local knitted outerwear industry, he added, is in contrast to that of the local almost defunct hosiery trade.

### Obituary

#### Bert V. Lichtie, Retired Selling Agent

Bert V. Lichtie, a retired mill representative, died in Pompano Beach, Fla. on June 26 after a week's illness. He was in his late 60's. Survivors are his wife, Elizabeth, and two sons. Mr. Lichtie, who retired three

years ago, had spent nearly half a century as a selling agent in the knitting industry. In 1931 he formed his own sales office which operated under the name Bert V. Lichtie & Co.

He was a founder and former officer of the Knitwear Mill Representatives Association.

#### H. Leslie Garth; Was Developer Of Machines

PHILADELPHIA, Pa. — H. Leslie Garth, of Garth Manufacturing Company here, died recently in Little Falls, N. J. after a prolonged illness. Mr. Garth was instrumental in developing the Perlok System and the machine for utilizing this unique process, which was later perfected as the Turbo Stapler. He is survived by his wife, a son and a daughter.

### Trade Drives

#### Industry Heads Give UJA Over \$250,000

Leaders of the knitwear and yarn industry contributed over \$250,000 to the United Jewish (Continued on Next Page)

# COLLINS & AIKMAN Yarns

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Appeal of Greater New York recently at a dinner honoring the 19 past chairmen of the UJA Knitwear and Yarn Division.

The past chairmen are: David Aronow, Lee Beachwear Co.; Albert Beldoch, Beldoch-Popper; Bennett M. Berman, Bennett M. Berman Associates; Sol Brustein, S. Brustein; Isidore Eichler, Jay Knit Co., Inc.; Sol Freeman, Brownie Knitting Mills, Inc.; Benjamin Kaplan, Mayflower Knitting Mills; Samuel Katz, Royal Yarn Dyeing Corp.; Sidney Korzenik, executive director and counsel, National Knitted Outerwear Association; Harry Silver, Lofties Knitting Mills; Carl Leff, National Spinning Co.; Joseph N. Leff, National Spinning Co.; Morris London; Irving Louis, Irwill Knitwear Corp.; Louis Malina, Malina Co.; Aaron Onish, Knickerbocker Yarn Co.; Michael Pauker, Barclay Knitwear Co., Inc.; Nathan Robins, May Knitting Co., and Morris Rosen, Sylvan Knitwear.

The money raised will speed the integration of immigrants in Israel by giving them homes and jobs.

Leonard Katz, Royal Yarn Dyeing Corp, the present division chairman, presided at the dinner. The guest speaker was Judge A. David Benjamin, Supreme Court Justice and a vice president of the UJA of Greater New York.

The knitwear and yarn division this year adopted the Israeli settlement of Sdeh Moshe as its share (\$110,720) in UJA's new Adopt-a-Project program. The sum, which the industry aims to raise within three years is in addition to its annual support and covers the amount needed to enable Sdeh Moshe to become self-supporting.

### Harold Korzenik Speaks On International Trade

PHILADELPHIA, Pa. — Harold Korzenik, counsel to the National Knitted Outerwear Association and the United Knitwear Manufacturers League, participated June 20 in a panel discussion on international competition at the Wharton School of Finance and Commerce, University of Pennsylvania. The seminar was part of the twelfth annual conference of industry executives at the University.

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### "Principles of Knitting Outerwear Fabrics and Garments"

#### Table of Contents

- Chap. 1—Introduction
- Chap. 2—Analysis of the Properties Typical of Knitted Structures
- Chap. 3—V-Bed Flat Knitting
- Chap. 4—Circular Jersey Knitting
- Chap. 5—Varieties of Circular Jersey Construction
- Chap. 6—Circular Rib Knitting Principles
- Chap. 7—Rib Knitting—Its Uses in Knitted Outerwear
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- Chap. 13—Horizontal Circular Spring Needle Knitting
- Chap. 14—Vertical Spring Needle Circular Knitting
- Chap. 15—Full-Fashioned Outerwear Knitting
- Chap. 16—Introduction to Warp Knit Fabric Manufacture

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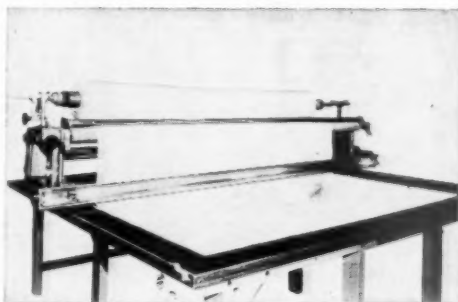
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## Warp Knitting Fundamentals

(Continued from Page 11)

There is little if anything to choose between the physical properties of Helanca made on the false twist and conventional principles. Both will stretch up to 500 per cent (in fine deniers) and bulk up to 300 per cent when relaxed. Yet, there is a certain amount of difference in hand, appearance and elastic properties of tricot fabrics knit with conventional and false twist materials. The first renders a fabric with somewhat firmer hand and rougher texture. It also imparts superior stretch and recovery. In general, the finer the denier used, the better the stretch and the more vigorous the recovery of the resultant fabric. Thus, a 2 x 20 denier Helanca will produce a fabric of better elastic characteristics than 1 x 40 denier yarn.

Wherever the stretch potential of torque yarns is too high for a specific end-use, it is possible to reduce it by any required amount without affecting the bulking properties. A well

known example of such a modified stretch yarn is Saaba (Universal Winding Co.) used extensively for manufacture of outerwear, underwear, swimwear, foundation garments and to a certain degree — warp knit fabrics where extreme stretch is not desirable (85).

Saaba is produced by modifying either Fluflo or Superloft yarns under conditions of controlled heat and tension. The processing is carried out on a throwing machine equipped with Saaba attachment. The latter consists of top feed roller, heater and bottom feed roller. Fluflo or Superloft yarn is fed into the heater via the top feed rollers and drawn out of it by the bottom feed roller. The tension of yarn passing through the heater is determined by the speed ratio of both rollers. Generally, the ratio is such that the yarn is exposed to heat in a relaxed state. Since the temperature in the heater box is close to that used in false twist processing, the yarn is annealed to a point where it loses a good portion of its crimp and stretch. The stretch, crimp, hand, ap-

(Continued on Next Page)

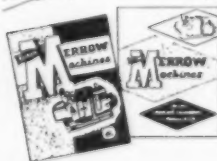
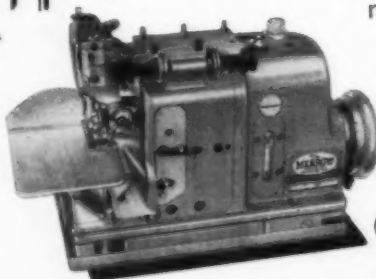
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pearance and bulk of Saaba depend on the speed ratio of the feed rollers, temperature in heater box and linear speed of the yarn passing through it. By varying any or all of these factors, it is possible to engineer a yarn having optimum characteristics for the given end-use.

Saaba in tricot has been knit into jersey either in conjunction with regular nylon or in 100 per cent stretch form. By using Saaba on both bars we obtain a fabric of excellent bulk, stretch, and recovery. If one of the bars carries regular yarn, the fabric stretch will be considerably reduced although there will be improvement in the recovery or "kick." A 40 denier Saaba tricot jersey (Saaba on both bars) yields 4.35 square yards/per pound at 7.6 inch quality.

Helanca has been knit into jerseys almost invariably without the use of regular nylon to capitalize fully on the excellent stretch properties of this material. Presence of regular yarn on one of the bars would constrain the Helanca component and reduce the stretch potential of the fabric. In tricot, the most popular Helanca deniers are 2 x 20 and 1 x 70, although 1 x 40 and 2 x 40 have been used as well.

A typical 2 x 20 denier Helanca jersey yields 2.77 square yards/per pound when knit at 14 inch quality and finished 92 inches.

Helanca yarns are also available in modified form with controlled amount of stretch, recovery, bulk and surface characteristics, each designed expressly for a specialized branch of the knitting industry.

Consumption of Helanca yarns in the warp knit industry has till now been on a rather modest scale. The Raschel branch of the industry has used some for the manufacture of stretch panties, swim suits and specialty articles. Tricot knitters have utilized Helanca for stretch glove, underwear and leotards. For reasons of economy, single end unbalanced Helanca is used instead of the doubled and balanced yarn.

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#### New Equipment

##### Willcox & Gibbs Has New Bartack Clamp

A new bartack offset clamp has been made available by Willcox & Gibbs Sewing Machine Company. The attachment is for tacking belt loops, tabs, garter belts, and similar operations where a large and cumbersome garment is involved.

Designed for the Pfaff 3334 bartack machine, the clamp is constructed to permit the machine to be flush mounted and set with the arm parallel to the front of the table. This is said to result in three improvements.

The standard sewing machine mounting lets the operator tack while the garment is on the table which facilitates handling.

Awkward positioning of tabs, straps, etc. is eliminated because the operator can feed-in tacking components with the ease and comfort of a regular sewing machine operator.

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KEENE, N. H.—Waistbands, belt backings, bindings, and other straight or bias cut materials can be printed, pressed, and wound at speeds up to 150 yards per minute with a Markem Model 15AJ rotary printer, manufactured by Markem Machine Company, mounted on a 500 winder-presser, manufactured by Oscar I. Judelsohn Inc., according to Thomas H. Higgins, sales development manager.

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## Infants' & Children's Orlon And Bulkies Sell In Boston

By EDWIN K. LANGILLE  
BOSTON, Mass.—Shetland-type Ortons and bulkies accounted for a large share of the bookings at a busy Eastern Travelers' children's show, June 4-8. Sales were consistently good for infants' knits, as they are all year.

Styles tended to the classics with square crew necks used widely for pullovers and cardigans ran to solids with the simple award type border. Jacquards appeared everywhere.

Manufacturers have added three or four fashion shades to basic colors for fall. Bone is a popular tone as it coordinates with about everything and Ted Curtin, Knitown Togs, said there was a surprisingly good call for solids or black in the sub-teen sizes.

Knitown Togs' classics pullovers and cardigans for sizes 7 to 14 in solids of red, flamingo, peacock, oriole, bone, parakeet (green) and gray, are decorated with rick-rack stitching on the shoulders which adds a dressy look.

The firm's line also includes a tunic style with short sleeves, waist tie and a deep split turtle neck with a two-button fasten on the left front. These, too, are offered in solid colors and Mr. Curtin said that the bone shade was outstandingly popular in this garment.

Knitown had an extensive selection of collar treatments in both sweaters and polo blouses including the stand-up type, mock turtles, full turtles and cowls split with button trims,

and frequently applied the fashion and McMullin type collar to lightweight pullovers.

Gray heathers were selling well, Mr. Curtin said, and magenta has been replaced in the line with a wild rose tone, which is brighter and livelier. A selection of wool sweaters has been added for fall for the first time in a long while. Knitown uses jacquard patterning on a deep cowl giving the effect of a decorated yoke, and also on the hem. For legging sets, this firm uses a variety of stitch patterns bringing out an embossed design. Mr. Curtin said the continuous demand for this group frequently creates a production problem.

Shetland-type Ortons were also the big thing in the Spur Knitting Mills collection of cardigans for two, three and 3x sizes and for pullovers and cardigans for the 3 to 6 and 7 to 14 group. This firm's new fashion colors are red glow, gold and Capri blue. Square crew necks were favored here too and used both for cardigans and pullovers.

One of Spur's novelty pullovers had raglan sleeves and a square collar, double strength, without any contrasting edging to set it off from the body of the sweater. This was decorated with allover horizontal stripes about two inches wide with a Norwegian pattern worked in alternating stripes of magenta, teal and green on a white body.

The line also included pullovers with yokes trimmed with hand-sewed stitching in multi-colors. The effect was somewhat like jacquard except that the design had an embossed appearance and stood out sharply. Spur also had a whole series of bulkies in Sayelle.

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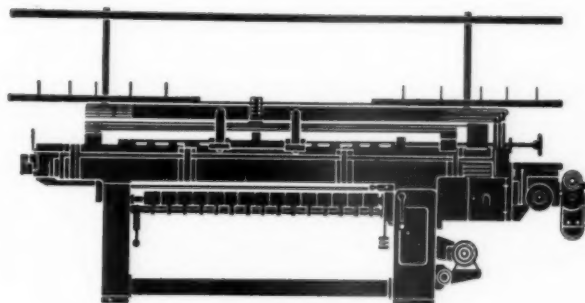
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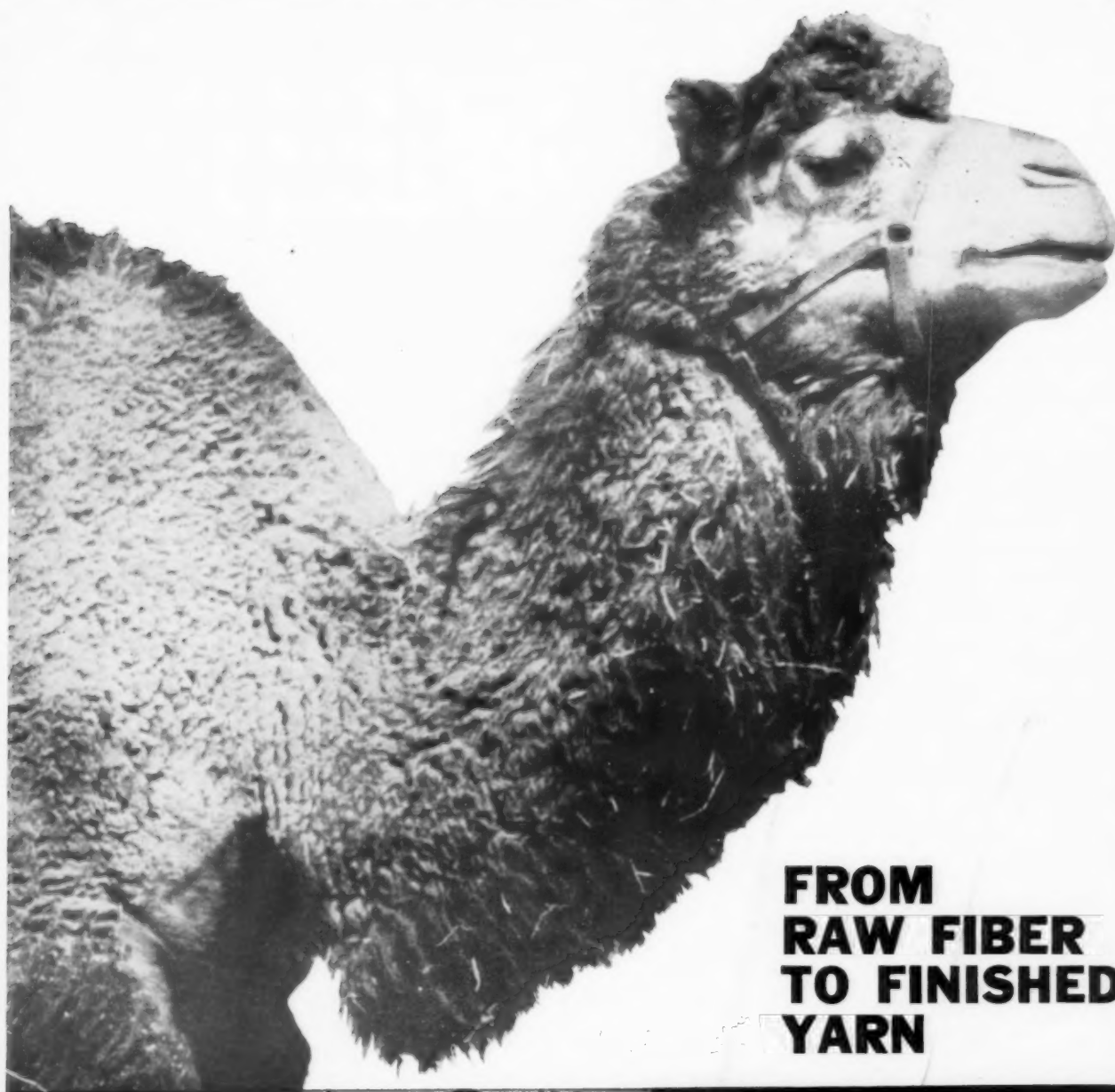
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